

Claims

- [c1] 1. An aperture plate for lithography systems capable of improving normalized image log slope (NILS) comprising:
a light-intercepting region comprising:
a reference center point defined on the light-in-
tercepting region;
a horizontal reference line intersecting the reference
center point; and
a vertical reference line intersecting the reference center
point; and
a light-transmitting region comprising:
four pole apertures, two of the pole apertures being po-
sitioned on the horizontal reference line and the other
two pole apertures being positioned on the vertical ref-
erence line, wherein the four pole apertures define a
central area; and
at least a symmetric pattern aperture positioned in the
central area, the symmetric pattern aperture having a
symmetric center overlapping the reference center point.
- [c2] 2. The aperture plate of claim 1, wherein each of the pole
apertures is the same distance away from the reference
center point.

- [c3] 3.The aperture plate of claim 1, wherein the symmetric pattern aperture comprises four rectangular apertures.
- [c4] 4.The aperture plate of claim 3, wherein the horizontal reference line and the horizontal reference line intersect two of the four rectangular apertures as bisectors individually.
- [c5] 5.The aperture plate of claim 1, wherein the symmetric pattern aperture comprises four trapezoid apertures.
- [c6] 6.The aperture plate of claim 5, wherein the horizontal reference line and the horizontal reference line intersect two of the four trapezoid apertures as bisectors individually.
- [c7] 7.The aperture plate of claim 1, wherein the symmetric pattern aperture is a circular aperture.
- [c8] 8.The aperture plate of claim 1, wherein the symmetric pattern aperture is a square frame aperture.
- [c9] 9.The aperture plate of claim 8, wherein the square frame aperture has four vertexes, two of the vertexes being positioned on the horizontal reference line, and the other two vertexes being positioned on the horizontal reference line.

- [c10] 10.The aperture plate of claim 8, wherein the square frame aperture has four vertexes, the horizontal reference line and a connection line between one of the vertexes and the reference center point having an included angle θ .
- [c11] 11.The aperture plate of claim 10, wherein the included angle θ is 45 degrees.